

Tetragonopterus lemniscatus (Characiformes: Characidae), a new species from the Corantijn River basin in Suriname

Ricardo C. Benine, Gabriela Zanon Pelição, and Richard P. Vari

(RCB) Laboratório de Ictiologia de Ribeirão Preto, Departamento de Biologia, FFCLRP- Universidade de São Paulo, Av. Bandeirantes, 3900, 14040-901, Ribeirão Preto, São Paulo, Brazil, e-mail: rbenine@hotmail.com;

(GZPD) Laboratório de Ictiologia de Ribeirão Preto, Departamento de Biologia, FFCLRP- Universidade de São Paulo, Av. Bandeirantes, 3900, 14040-901, Ribeirão Preto, São Paulo, Brazil, e-mail: gzpd@usp.br;

(RPV) Division of Fishes, Smithsonian Institution, P.O. Box 37012, National Museum of Natural History, WG-14, MRC 159, Washington, D.C. 20013-7012, U.S.A., e-mail: vari.richard@nmnh.si.edu

Abstract.—*Tetragonopterus lemniscatus*, a new species of characid characiform, is described from the Corantijn River basin in western Suriname. The species is readily distinguished from its congeners (*T. argenteus*, *T. chalcus*) by the presence of dark, longitudinal stripes positioned between adjacent scale rows of the lateral surface of the body.

Resumo.—*Tetragonopterus lemniscatus*, uma nova espécie de caraciforme caracídeo, é descrita de bacia do Rio Corantijn, oeste de Suriname. Esta espécie é prontamente distinguida de seus congêneres pela presença de um padrão estriado de coloração ao longo do corpo, formado por faixas escuras presentes entre as fileiras de escamas adjacentes.

The Neotropical characid characiform genus *Tetragonopterus* is characterized externally by a relatively deep body with a transversely-flattened prepelvic region that is bordered laterally, particularly proximate to the pelvic-fin insertion, by distinctly-angled scales, a pronounced ventral curvature of the anterior portion of the lateral line, an anal fin with a long base, and a complete outer row of teeth on the premaxilla. Recent authors (e.g., Géry 1977:450; Reis 2003: 212) have recognized only two species of *Tetragonopterus*, *T. argenteus* and *T. chalcus*, but the examination of samples of the genus that originated in the Corantijn River basin of western Suriname revealed a third species of the genus, which we describe herein.

Material and Methods

Measurements are given in terms of standard length (SL). Lateral-line scale counts

include all pored scales along that series, including scales posterior to the hypural joint. In fin-ray counts, lower-case Roman numerals indicate unbranched rays, and Arabic numerals indicate branched rays. The last anal-fin rays that are joined at the base were counted as one element. Morphometric and meristic data were taken following the procedures outlined in Fink & Weitzman (1974). Individual meristic values in the description are followed by their frequency in parentheses, with values for the holotype indicated in square brackets. Gill rakers counts were taken from specimens that were cleared and counterstained following the method of Taylor & Van Dyke (1985). Vertebral counts were taken via radiographs and include the four vertebra of the Weberian apparatus and the terminal centrum.

Institutional abbreviations follow Leviton et al. (1985) with the addition of LIRP, La-

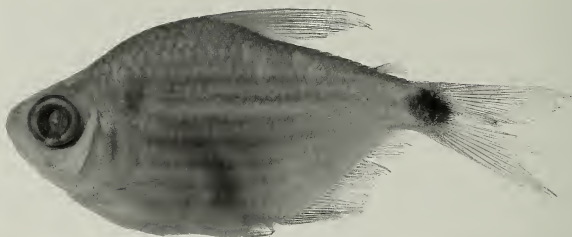


Fig. 1. *Tetragonopterus lemniscatus*, new species, holotype, USNM 225366, 47.5 mm SL; Suriname, Nickerie District, tributary to Sisa Creek.

boratório de Ictiologia de Ribeirão Preto, Departamento de Biologia da FFCLRP, Universidade de São Paulo, Ribeirão Preto, SP, Brazil; and NZCS, National Zoological Collection of Suriname, Paramaribo, Suriname.

Tetragonopterus lemniscatus,
new species
Fig. 1, Table 1

Holotype.—USNM 225366, adult male, 47.5 mm SL, Suriname, Nickerie District,

Table 1.—Morphometric data for holotype and 11 paratypes of *Tetragonopterus lemniscatus*.

	Holotype	Paratypes	
		Range	Mean
Standard length (mm)	47.5	41.8–81.4	
Percentages of standard length			
Greatest body depth	51.1	46.2–53.9	50.0
Snout to dorsal-fin origin	52.1	51.3–53.6	52.4
Snout to pectoral-fin origin	28.9	27.6–29.9	29.1
Snout to pelvic-fin insertion	50.9	47.5–52.2	49.6
Snout to anal-fin insertion	67.9	64.6–69.4	67.2
Caudal peduncle depth	12.0	10.3–12.0	11.0
Caudal peduncle length	9.3	7.1–9.5	8.3
Pectoral-fin length	22.8	21.7–24.3	23.0
Pelvic-fin length	19.6	17.6–21.1	19.7
Dorsal-fin length	32.8	32.6–44.3	37.2
Orbit to dorsal-fin origin	38.5	37.1–42.1	38.8
Head length	26.0	25.6–29.4	28.1
Head depth	22.2	20.4–22.2	21.4
Percentages of head length			
Snout length	27.0	24.4–28.2	26.2
Upper jaw length	41.3	41.3–44.9	43.3
Horizontal orbital diameter	41.8	38.1–47.0	42.9
Least interorbital width	38.6	29.6–38.6	32.9

tributary to Sisa Creek, north side of stream approximately 700 m downstream of crossing of road from Amotopo to Camp Geologie, approximately 3°42'N, 57°42'W, R. P. Vari et al., 20 Sep 1980.

Paratypes.—All collected in Suriname, Nickerie District. USNM 374750, 4 specimens, 42.0–46.6 mm SL. LIRP 4928, 2 specimens, 47.5–47.9 mm SL, cleared and counterstained, collected with holotype. USNM 225523, 2 specimens, 74.0–81.4 mm SL. LIRP 4929, 1 specimen, 79.8 mm SL, stream at km 212 of Amotopo to Camp Geology road, at Machine Park-Camp 212, approximately 3°50'N, 57°34'W, R. P. Vari et al., 15 Sep 1980. NZCS F7062, 1 specimen, 62.1 mm SL, formerly USNM 225320, stream entering Corantijn River, at approximately km 385, slightly N of Tiger Falls, approximately 4°00'N, 58°02'W, R. P. Vari et al., 16 Sep 1980. USNM 224367, 2 specimens, 48.4–60.1 mm SL, Kamp Kreek, 100 m N of turnoff to Camp Geology, approximately 4°49'N, 57°28'W, R. P. Vari et al., 13 Sep 1980.

Diagnosis.—*Tetragonopterus lemniscatus* is distinguished from its two recognized congeners, *T. argenteus* and *T. chalceus*, by the dark pigmentation on the lateral surface of the body (presence of dark, longitudinal stripes formed by pigmentation fields along the margins of the adjoining scale rows versus the absence of dark stripes, respectively). *Tetragonopterus lemniscatus* further differs from *T. argenteus* in the number of median scales between the tip of the supraoccipital spine and the base of the first dorsal-fin ray (8 versus 12–16, respectively).

Description.—Morphometric data are summarized in Table 1. Overall body size moderate (41.8–81.4 mm in SL). Body proportionally deep. Greatest depth of body at origin of dorsal fin. Dorsal profile of head slightly concave above orbit. Each nostril located closer to anterior margin of orbit than to each other. Supraoccipital spine elongate, but tip of spine not extending beyond vertical through posterior margin of opercle.

Dorsal profile of body convex from tip of supraoccipital spine to posterior terminus of base of dorsal fin; slightly convex from that point to end of base of adipose fin. Caudal peduncle profile concave both dorsally and ventrally. Ventral profile of body convex from tip of lower jaw to beginning of caudal peduncle. Prepelvic region of body transversely flattened, with flattening more pronounced proximate to pelvic-fin insertion. Scales along lateral margins of flattened region immediately anterior to insertion of pelvic fin with distinct angle. Obtuse median keel extending from immediately posterior of insertion of pelvic fin to urogenital opening.

Mouth terminal. Premaxillary teeth in two rows. Outer premaxillary tooth row with 4 (5) or 5 (7) [5] tricuspid teeth with median cusps most developed. Inner row with 5 teeth with tetracuspid symphyseal tooth followed by two pentacuspid, and then two, rarely one, tricuspid teeth. Maxilla with 3 tricuspid teeth along anterodorsal portion of free anterior margin. Dentary with 4 (4) or 5(8) [5] pentacuspid teeth followed by series of small tricuspid teeth (Fig. 2).

Dorsal-fin rays ii,9 (12) [ii,9]. Distal margin of dorsal fin straight. Adipose fin well-developed. Anal-fin rays iv,29 (3), iv,30 (5), or iv,31 (4) [iv,30]. Posterior unbranched and anterior branched anal-fin rays longest, with distal margin of remainder of fin moderately concave. Principal caudal-fin rays i,17,i (12) [i,17,i]. Pectoral-fins rays i,11 (2), i,13 (7), or i,14 (3) [i,13]. Tip of pectoral fin extending beyond vertical through insertion of pelvic fin. Pelvic-fin rays i,7 (12) [i,7]. Tip of pelvic fin reaching to base of first or second unbranched anal-fin ray in smaller individuals, barely falling short of base of first unbranched ray in larger specimens.

Scales cycloid. Median scales anterior to origin of dorsal fin 8 (12) [8]. Lateral line distinctly ventrally curved anteriorly, with 33(3), 34(5), or 35(4) [33] pored scales. Rows of scales above lateral line to origin of dorsal fin 6 (11) or 7 (1) [6]. Rows of

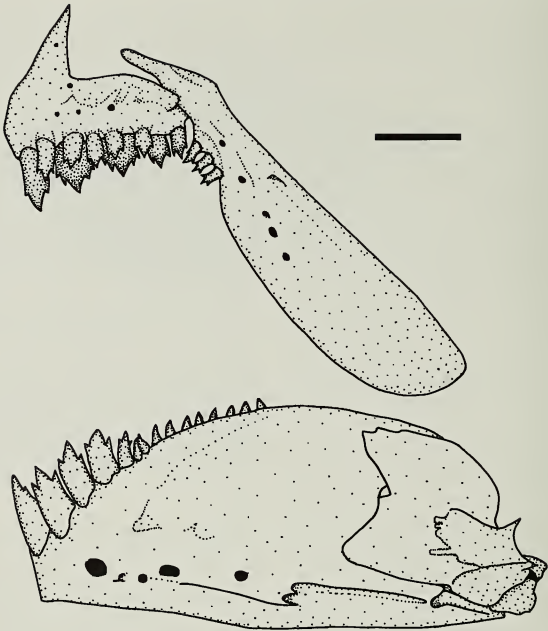


Fig. 2. *Tetragonopterus lemniscatus*, paratype, LIRP 4928, 47.5 mm SL. Premaxilla, maxilla, and lower jaw showing form of dentition; left side, lateral view. Scale bar = 1 mm.

scales below lateral line to origin of anal fin 5 (11) or 6 (1) [5]. Scales around caudal peduncle 14 (11) [14]. Scale sheath formed of one row of scales overlaps basal portions of all but three or four posterior most anal-fin rays. Field of small scales covering base of caudal fin; scale field extending further distally on fins along its dorsal and ventral margins.

Two cleared and stained specimens with 9 gill-rakers on upper limb and 13 gill-rakers on lower limb of first gill arch.

Vertebrae 30 in all specimens including holotype.

Coloration in life.—(Based on photograph of recently captured specimen from the Corantijn basin by third author). Overall coloration silvery, but somewhat purplish on portion of body dorsal to horizontal running approximately through dorsal margin of orbit. Humeral spot faintly apparent. Dark stripes on lateral surface of body apparent, but slightly masked by overlying guanine. Infraorbital series, opercle, ventral



Fig. 3. Map of Suriname showing collecting sites of *Tetragonopterus lemmiscatus*. Star = holotype locality and dots = paratype localities (some symbols represent more than one locality or lot).

portion of head, and most of body bright silver. Iris yellowish with indications of red dorsally. Fins dusky with yellowish cast.

Color in alcohol.—Overall ground coloration yellowish tan. Dorsal portion of head, jaws, nape, and portion of middorsal region of body anterior and posterior to base of dorsal fin distinctly darker. Posterior margins of scales with band of dark chromatophores. Dark pigmentation particularly well-developed on dorsal and ventral portions of exposed regions of scales and forming undulating, narrow, horizontal stripes along regions of overlap of scale rows on lateral surface of body. Stripes extending on anterior portion of body from horizontal through base of insertion of pectoral fin to region about two scales ventral of origin of dorsal fin. Stripes ventral of horizontal through dorsal margin of orbit decurved

ventrally anteriorly, with posterior portion of ventralmost stripes posterodorsally-angled in region over base of anal fin. Smaller individuals with 9 or 10 dark stripes apparent. Dorsalmost stripes becoming variably masked by overall darker pigmentation on dorsolateral region of body in larger specimens. Humeral region with indistinct, slightly posterodorsally-aligned bar in area above second and third scales of lateral line. Humeral spot becoming progressively less apparent in larger specimens. Caudal peduncle with large, rounded, dark spot continuing posteriorly onto basal portions of middle caudal-fin rays. Short, irregular, horizontal stripes extending anteriorly from anterior margin of spot in some larger individuals.

Median fins with small, dark chromatophores overlying both membranes and rays

of rayed fins and lateral surface of adipose fin. Distal margin of caudal fin somewhat darker in some large specimens. Pectoral and pelvic fins hyaline or with few, small, dark chromatophores.

Distribution.—*Tetragonopterus lemniscatus* is only known from localities in the Corantijn River basin in western Suriname (Fig. 3).

Habitat.—The holotype locality of *Tetragonopterus lemniscatus* was a black water rainforest stream with a limited amount of emergent vegetation and shadowed by overhanging trees. The stream had a moderate rate of water flow over a sand bottom with areas of detritus. Although all other population samples of the species were also collected in black water, some of the locations were in full sun and at other collecting sites the current was swift. Some locations at which the species was collected had areas of clay, rock, or mud bottom.

Etymology.—The species name, *lemniscatus*, from the Latin for beribboned, is in reference to the series of dark stripes along the lateral surface of the body in this species.

Remarks.—*Tetragonopterus* was first reported from Suriname by Kner (1859:38) who cited *T. chalceus* for that country. That citation may have been the basis for the inclusion of the species in the Surinamese ichthyofauna by Eigenmann (1912:68; 1917:58) and for the report of the occurrence of the species throughout the Guianas by Géry (1977:450). Ouboter and Mol (1993:146) reported *T. chalceus* from both the upper portion of the Corantijn River and from the Kabalebo River, the major right bank tributary to the Corantijn River. It is likely that the above citations, in particular that of Ouboter and Mol (1993), were based, at least in part, on *T. lemniscatus*. *Tetragonopterus* has not been reported from elsewhere in Suriname, although *T. chalceus* has been reported from a series of localities across French Guiana including the Fleuve Maroni along the Surinamese-

French Guiana border (Planquette et al., 1996:320).

Comparative material.—*Tetragonopterus chalceus*: MNHN A9812 (holotype); MCP 15145 (4, 1 C&S); USNM 66293 (1); MZUSP 29820 (3) (1 C&S); MCP 14015 (1, C&S); MZUSP 40819 (2, 1 C&S). *Tetragonopterus argenteus*: MNHN A-9807 (1); MZUSP 15570 (4, 2 C&S); MZUSP 5091 (2, 1 C&S); USNM 224789 (4).

Acknowledgments

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